

CLAIMS

1. A thin film forming apparatus to form a thin film by film forming means on each of a plurality of substrates held on an outer circumferential surface of a substrate holder that is rotatable about a rotating shaft, while the substrate holder is being rotated in an evacuable chamber, the apparatus is characterized in that it comprises

transferring to/from means to transfer one of a substrate itself or a substrate fixing jig fixedly holding a substrate or a plurality of substrates that is to be removably secured onto the outer circumferential surface of the substrate holder to/from the substrate holder in the evacuable chamber; and

securing means to releasably secure the substrate itself or the substrate fixing jig transferred by the transferring to/from means onto the outer circumferential surface of the substrate holder.

2. The thin film forming apparatus according to claim 1, characterized in that the substrate holder is installed rotatably about a horizontal rotating shaft, and the transferring to/from means transfers one of the substrate fixing jig and the substrate itself in a horizontal direction.

3. The thin film forming apparatus according to claim 1, characterized in that the transferring to/from means transfers one of the substrate fixing jig and the substrate itself in an axial direction of the rotating shaft.

4. The thin film forming apparatus according to claim 1,
characterized in that the transferring to/from means transfers
one of the substrate fixing jig and the substrate itself in a
5 direction parallel to an outer circumferential surface of the
substrate holder.

5. The thin film forming apparatus according to claim 1,
characterized in that both the transferring to/from action by
10 the transferring to/from means and the securing action by the
securing means are performed in a depressurized environment.

6. The thin film forming apparatus according to claim 1,
characterized in that the releasing action by the securing
15 means is controlled by an electrical signal.

7. The thin film forming apparatus according to claim 1,
characterized in that the securing means has a mechanism to
hold one of the substrate fixing jig and the substrate itself
20 by pressing with retaining means, and a mechanism to release
one of the substrate fixing jig and the substrate itself from
the holding by compressing the retaining means by one of a
drive unit mounted outside of the evacuable chamber and a
drive unit mounted inside of the substrate holder.

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8. The thin film forming apparatus according to claim 1,
characterized in that the securing means secures the substrate

fixing jig by magnetic force.

9. The thin film forming apparatus according to claim 1,
characterized in that the transferring to/from means is
5 installed in a transferring chamber which is connected to the
evacuatable chamber via a valve, and the transferring chamber
is evacuatable.

10. The thin film forming apparatus according to claim 9,
10 characterized in that it further comprises a load/unload
chamber which is connected to the transferring chamber via a
valve, and the load/unload chamber is evacuatable.

11. The thin film forming apparatus according to claim 1,
15 characterized in that the film forming means is one of
sputtering means, deposition means, and CVD means, or a
combination of these means.

12. The thin film forming apparatus according to claim 1,
20 characterized in that one of a reaction gas supplying means to
supply a reaction gas, plasma exposing means to expose plasma,
ion irradiating means to irradiate ions, and etching means to
etch a portion of the thin film, or a combination of these
means is applicable to the thin film formed by the film
25 forming means.